

Code :R7412303

R7

IV B.Tech I Semester(R07) Supplementary Examinations, May/June 2011
DOWNSTREAM PROCESSING
(Biotechnology)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. Enumerate the common problems associated with fermentation, cell disruption, isolation, concentration, purification and formulation of high value low volume products.
2. Give an account of different classes of contaminants encountered during downstream processing.
3. Describe in-detail about the advantages and disadvantages of different types of cell disruption methods.
4. Write short notes on:
 - (a) Applications of Ultra-filtration
 - (b) Partial rejection of solutes
 - (c) Concentration Polarization
5.
 - (a) Explain briefly super critical extraction.
 - (b) What are the separation techniques available for insitu product removal and explain them briefly.
6.
 - (a) Why is two-dimensional electrophoresis currently the system of choice for scale-up?
 - (b) A protein is run in a PAGE electrophoresis apparatus for 3 hours at 2000 volts. The plate is 20cm long. The center of the protein spot is measured at 8.54cm from the feed well and the spot width is 0.103cm. Estimate μ and D for the protein at the conditions of this experiment.
7.
 - (a) A liquid chromatograph using 20 μ m silica gel is separating acetophthalene (A) from dinitronaphthalene (D). K values are $K_A=5.5$ $K_D=5.8$ in a solvent which is 23% methylene chloride, 77% pentane. With an interstitial velocity of 1.0cm/sec, H is measured as 0.12cm. We desire a resolution of $R=1.0$. What column length is required?
 - (b) Write short notes on ion exchange with more emphasis more on its application in biotechnology.
8. Taking an example of manufacture of citric acid, explain the problems and requirements of a downstream processing.
